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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/503,676	02/14/2000	Michael Joseph Johnson	RAL9-99-0124	7028

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EXAMINER
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WON, YOUNG N

ART UNIT	PAPER NUMBER
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2155

DATE MAILED: 03/25/2004

19

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/503,676

Applicant(s)

JOHNSON, MICHAEL JOSEPH

Examiner

Young N Won

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 and 29-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 and 29-47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Amended claims 2, 9, and 20 and all remaining claims have been re-examined.
2. Claims 1-27 and 29-47 are pending with this action.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-27 and 29-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boucher et al. (US 6226680 B1).

### **INDEPENDENT:**

As per claims 1, 2, 6, 10, 11, 15, 19, 20, and 24, Boucher teaches of a network having a sending computer system and a receiving computer system, each of the sending and receiving computer systems including a processor (see Fig.1, #28), a memory (see Fig.1, #35 and col.5, lines 9-14) and a network adapter (see col.5, line 2), the memory containing a data structure used for storing a common data buffer (see col.5, lines 9-14), a method (see col.3, line 41), system (see col.3, lines 35-36), and a computer readable medium containing a computer program (see col.1, lines 31-34 and

col.2, lines 29-31), for sending and receiving payload data by layers or sub-layers of at least one communications protocol (see col.3, lines 41-45), the method comprising the steps of: (a) storing a first start pointer pointing to a first byte of the payload data in a first common data buffer of the sending computer system (see col.10, lines 26-30 and col.19, lines 36-45); (b) adding a first header to the payload data in the first common data buffer at a location preceding the byte pointed to by the first start pointer according to a first protocol layer of the communications protocol at the sending computer system (see col.2, lines 35-54; col.6, lines 28-32; and col.10, lines 18-21); (c) adjusting the first start pointer to point to a first byte of the first header (implicit: see col.6, lines 29-32 and col.19, lines 36-45); (d) invoking a send procedure of a second and lower protocol layer of the communications protocol at the sending computer system (see col.2, lines 49-54); (e) transferring to the second protocol layer the start pointer by the send procedure (see col.6, lines 28-32), wherein the payload data is not copied in preparation for or during the send procedure (see col.3, lines 56-64; col.5, lines 32-37; and col.9, lines 36-52); (f) adding a second header to the payload data in the first common data buffer at a location preceding the first start pointer (see col.2, lines 35-54 and col.6, lines 28-32); (g) sending the payload data and the first and second headers to the receiving computer system (see col.3, lines 40-49 and col.5, lines 37-42); (h) storing the payload data and the first and second headers in a second common data buffer of the receiving computer system (see col.5, lines 32-37; col.7, lines 26-27; and col.10, lines 8-13); (i) invoking a receive procedure of a second protocol layer of the communications protocol at the receiving computer system (see col.6, line 12 to col.7, line 5); (j) storing a pointer and

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end pointer to the payload data and also storing a second start pointer pointing to a first byte of the second header in the second common data buffer (see col.19, lines 36-45); (k) adjusting a the second start pointer to point to the first byte of the first header according to the second protocol layer at the receiving computer system (see col.6, lines 29-32 & 60-64); (l) invoking a receive procedure of a first and higher protocol layer of the communications protocol at the receiving computer system (see col.6, line 12 to col.7, line 5); and (m) transferring to the first protocol layer at the receiving computer system the second start pointer (see col.2, lines 55-60 and col.6, line 33 col.7, line 5), wherein the payload data is not copied in preparation for or during the receive procedure (see col.3, lines 56-64; col.5, lines 32-37; and col.9, lines 36-52).

Boucher further teaches that the transmitting and receiving are performed in opposite fashion (see col.1, lines 40-42; col.2, lines 55-60; and col.3, lines 45-49). In other words, the steps of transmitting are opposite the steps of receiving which Boucher specifically teaches. Although Boucher teaches of overcoming the deficiencies of prior art of "avoiding the delays and pitfalls of conventional software layer processing, such as repeated copying and interrupts" (see col.3, lines 57-59) by processing "on the fly" so that all "protocol headers for a packet can be processed without copying, moving or storing the data between protocol layers" (see col.9, lines 41-43), he does not explicitly teach that the system still processes the headers in the conventional way of adding headers to the payload data while traveling through the layers, but such step and means are well known in the art (see col.2, lines 19-60). Therefore, it would have been obvious to a person of ordinary skill in the art to employ the teachings of known prior

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method and means within the system of Boucher by adding headers through the layers because Boucher teaches still teaches of processing all headers for a packet as referenced above.

As per claims 29, 38, and 39, Boucher teaches a method, a system, and a computer readable medium containing a computer program for processing payload data in a computer system using layers of a network communications protocol (see col.1, lines 17-20), the method, system and program comprising the steps of: (a) storing the payload data in a data buffer (see col.5, lines 37-42 and col.7, lines 26-27); (b) processing the payload data using a first protocol layer of the network communications protocol (see col.2, lines 35-60); and (c) processing the payload data using a second protocol layer of the network communications protocol (see col.6, line 12 to col.7, line 5), wherein the payload data is not copied during and between being processed by the first and second protocol layers (see col.3, lines 56-64; col.5, lines 32-37; and col.9, lines 36-52).

DEPENDENT:

As per claims 3, 12, and 21, Boucher further teaches wherein a checksum is added to the header in the common data buffer preceding the payload data being sent (see col.8, line 67 to col.9, line 3).

As per claims 4, 13, and 22, Boucher further teaches wherein the transferring step includes any application data or information required by the send procedure of the second and lower protocol layer (see col.2, lines 35-54; and col.11, lines 27-42).

As per claims 5, 14, and 23, Boucher teaches of further comprising the step of (f) adjusting a size of the payload data to be sent by the second and lower protocol layer by adjusting the end pointer (see col.1, lines 60-63 and line 66 to col.2, line 3).

As per claims 7, 16, and 25, Boucher further teaches wherein a checksum following the header and added by the sending computer system is removed from the received payload data in the common data buffer (see col.7, lines 21-24).

As per claims 8, 17, and 26, Boucher further teaches wherein the checksum is removed by adjusting the start pointer of the common data buffer to point to a memory location following the checksum (see col.7, lines 21-27).

As per claims 9, 18, and 27, Boucher teaches of further comprising the step of (m) transferring any application data or information required by the receive procedure of the first and higher protocol layer (see col.6, line 54 to col.7, line 5).

As per claims 30 and 40, Boucher further teaches wherein the payload data does not move within the data buffer during and between being processed by the first and second protocol layers (see col.3, lines 56-64; col.5, lines 32-37; and col.9, lines 36-52).

As per claims 31 and 41, Boucher further teaches wherein the processing step (a) further comprises the steps of (a2) positioning a first pointer to point to a first byte of the payload data; and (a3) positioning a second pointer to point to a last byte of the payload data, wherein the first protocol layer uses the first and second pointers to locate the payload data for processing (see claim 1 rejection above; col.10, lines 18-30; and col.19, lines 36-41).

As per claims 32 and 42, Boucher further teaches wherein the processing step (b) further comprises the steps of: (b2) adding a first element to the payload data; and (b3) moving the second pointer to point to a last byte of the first element, wherein the first pointer does not move when the first element is added (see claim 1 rejection above; col.10, lines 18-30; and col.19, lines 36-41).

As per claims 33 and 43, Boucher further teaches wherein the processing step (c) further comprises the steps of (c2) adding a second element to the payload data; and (c3) moving the second pointer to point to a last byte of the second element, wherein the second protocol layer uses the first and second pointers to locate the payload data and the first element to add the second element, wherein the first pointer does not move when the second element is added (see claim 1 rejection above; col.10, lines 18-30; and col.19, lines 36-41).

As per claims 34 and 44, Boucher further teaches wherein the first element comprises a header associated with the first protocol layer (see col.2, lines 39-41).

As per claims 35 and 45, Boucher further teaches wherein the first element comprises a checksum associated with the first protocol layer (see col.6, lines 33-37 and col.8, line 67 to col.9, line 3).

As per claims 36 and 46, Boucher further teaches wherein the second element comprises a header associated with the second protocol layer (see col.2, lines 42-44).

As per claims 37 and 47, Boucher further teaches wherein the second element comprises a checksum associated with the second protocol layer (see col.6, lines 33-37 and col.8, line 67 to col.9, line 3).



***Response to Remarks***

4. In response to the argument one of ordinary skill in the art would agree that the “generic protocol layer class (GPLC)” as stated in the disclosure and recited in the Amendment on page 22, is clearly taught by Boucher’s “**single** wider layer” (see below). Furthermore, one of ordinary skill in the art would also agree that the “common buffer”, as recited in the Amendment on page 22, is also taught by Boucher’s “buffer on a host” (see below). Furthermore, in response that the conventional method and the method of Boucher cannot be combined, it is evident in the teachings of Boucher that such methods can be combined (see Fig.4A).

In response to the argument that Boucher does not teach or suggest the “combination of processing of the payload data using first and second protocol layers, wherein the payload data is not copied in preparation for or during the send and receive procedure”, clearly Boucher teaches this limitation (see col.9, line 20 to col.11, line 42).

In response to the argument regarding Boucher, the cited reference location, by the applicant(s) or applicant’s representative, particularly column 2, lines 51-54 and column 2, lines 64-67 regarding “data moving and **copying**” and “**repeated data copies**”, is not the step of Boucher, but rather the teachings of the deficiencies of prior art and the teachings in which Boucher intends to overcome. Clearly Boucher teaches of a “protocol processing method and architecture that results effectively **collapses** the layers of a connection-based, layered architecture such as TCP/IP into a **single** wider

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layer which is able to send network data more directly to and from a desired location or **buffer** on a host" (see col.3, lines 41-45). Furthermore, Boucher teaches "The fast-path employs a specialized microprocessor designed for processing network communication, avoiding the delays and pitfalls of conventional software layer processing, such as repeated copying and interrupts to the CPU" (see col.3, lines 56-60). Lastly, Boucher states the advantages of hardware processing rather than software processing (conventional method) is that the packets do not "have to be stored, moved, copied or pulled from storage for processing each protocol layer header, offering dramatic increases in processing efficiency and savings in processing time for each packet (see col.11, lines 43-49).

In response to the arguments regarding independent claims 2, 6, 10, 11, 15, 19, 20, 24, 29, 38, and 39, Boucher clearly teaches the element of "wherein the payload data is not copied in preparation for or during the send procedure" and/or "receive procedure" (see reference locations in claim rejection above).

Therefore, all remaining dependent claims remain rejected.

### ***Conclusion***

5. It is evident after further review, that clearly, Boucher teaches and suggests the claimed invention. Therefore, claims 1-27 and 29-47 remain rejected.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

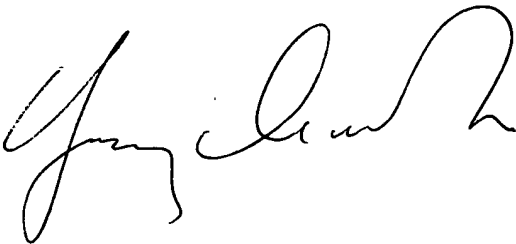
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Young N Won whose telephone number is 703-605-4241. The examiner can normally be reached on M-Th: 6AM-3PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T Alam can be reached on 703-308-6662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Young N Won



March 23, 2003

  
**HOSAIN ALAM**  
**SUPERVISORY PATENT EXAMINER**